

REMARKS

In the Office Action mailed July 24, 2007, the Examiner noted that claims 1-14 were pending, and rejected all claims. Claims 1 and 10-14 have been amended, and, thus, in view of the forgoing claims 1-14 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

On page 2 of the Office Action, the Examiner rejected claims 1-3, 5, 9 and 10-14 under 35 U.S.C. § 102 as anticipated by Brady. Pages 5-7 of the Office Action reject claims 4, 6, 7 and 8 under 35 U.S.C. § 103 as obvious over Brady variously with Benton, Piccinelli, Kakinami and Hu.

In the Action, on pages 2 and 3, the Examiner points to Brady at figures 2, 5 and 7B and to the text at col. 12, lines 34-46 & 47-67. The text of Brady noted by the Examiner particularly states:

Data reduction is desirable to increase the speed of processing the information for tracking. Reducing the resolution of a region of interest facilitates data reduction. Pixel averaging followed by subsampling is used to reduce resolution. For example, if a 2.times.2 kernel is used, averaging the pixel intensities of an image over the four pixels in the kernel, the resolution of the target region is reduced by one-quarter. A multiresolution pyramid, with layers of images of decreasing size and resolution, can be created with multiple applications of the kernel. Thus, the target region can be searched for at a lower resolution image to identify areas where the target region is likely located before searching in the same areas in a higher resolution image.

After the target regions have been identified, a match score is calculated for each target region. The source region is overlaid over each target region. The match score takes into account edge elements from the translated source regions that match edge elements from a target region. The better the edge elements match, the higher the match score. Then, edge elements are weighted according to evidence of motion, as determined by the amount the contrast is changing with respect to time at a given pixel, such that vehicle edge elements are maximized and background edge elements are minimized. The weighting is performed to minimize less relevant pixels, such as pixels that do not change and therefore are not helpful in determining whether an object has moved. Differences in the reference image and current image can create weights to determine the relevancy of a particular pixel, based on the amount of change in pixel intensity. The weights will represent differences in pixel intensity at fixed locations at different times. The weights therefore determine that a pixel has both moved from one location in the source region at a reference time and also has moved to a similar location in the target region at the current time. Both must occur to have a high weight. To determine whether the pixel has moved from the source region to the target region, the absolute value of the difference between the current source region and the reference source region is determined. Then the absolute value of the difference between the current target region and reference target region is determined. After applying a shrinking function to the source region difference, a fuzzy logical AND is applied to these differences, such as by multiplying the results and taking the square root.

(See Brady, col. 11, line 34-col. 12, line10)

As can be seen, this text discusses a desire to increase speed of processing for tracking. To do this, the resolution of the image is reduced and the target region is searched in the lower resolution image before the higher resolution image is searched. If multiple target regions are identified, the source region is overlaid on each target region so that a match score can be calculated.

Figure 7B shows the placement of a "tent" function for regions of interest. The tent function is used to fuzzify edges.

While wedge-shaped operator 66 fuzzifies the angle characteristics of the edgels, the location of the angles of each edgel still must be taken into account. Thus, a location fuzzy set operator must be applied to the region of interest to determine the general location of the angle components of the edgels. In a preferred embodiment, tent function 60, as shown in FIG. 7A, is used as the fuzzy set operator for location. The tent function 60 has a unit height. Tent function 60 performs a two dimensional fuzzification of the location of the edgels.

(See Brady, col. 8, lines 49-58)

As can be seen, Brady does not teach or suggest "extracting as a partial image a part of a high-resolution image captured by the high-resolution camera", "generating a low-resolution image having lower resolution from the partial image", "detecting the mobile object using the low-resolution image", "performing a recognizing process for the detected mobile object using a high-resolution image" and "outputting a recognition result of the detected mobile object" as recited in claim 1 and discussed on application page 7, lines 10-21.

It is submitted that claim 1 distinguishes over Brady and withdrawal of the rejection is requested.

Benton, Piccinelli, Kakinami and Hu add nothing to Brady with respect to the above discussed features of claim 1

The above discussed features can be used by the Examiner to inform the reexamination of claim 10-14.

It is submitted that the independent claim distinguish over the prior art and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, claim 3 calls for "generates a low-resolution image by combining the plurality of partial images, and generates a video picture from low-resolution images consecutive in a time series". Brady does not teach or suggest such. It is submitted that the dependent claims are independently patentable over the prior art.

It is submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

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If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

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